



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,134	12/13/2005	Andrew John Hardwick	36-1890	9470
23117 7590 02/13/2008 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER				
MCCOMMAS, STUART S				
ART UNIT		PAPER NUMBER		
2629				
MAIL DATE		DELIVERY MODE		
02/13/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/527,134

Applicant(s)

HARDWICK ET AL.

Examiner

STUART MCCOMMAS

Art Unit

4115

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/8/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date 10/4/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8-9 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosenberg et al. (United States Patent 5,734,373), hereinafter referenced as 373.

Regarding claim 8, 373 discloses an interactive haptic output terminal in combination with a bi- directional transmission arrangement, the terminal comprising at least a haptic output device and control means, said control means receiving signals from said haptic output device to determine a current position for said device, and to determine from signals received from said transmission arrangement a preferred current position for said haptic output device, said control mean determining an output force and direction required to move said haptic output device from the current position to the preferred position and further modifying said output force and direction using a damping factor to slow apparent movement between the positions and outputting signals defining the modified force and direction. Specifically 373 discloses a host computer system 12 used with a force feedback interface device 14 in a bi-directional transmission arrangement where the host computer system 12 receives signals from the haptic output device to determine the last stored current position of input object 34 and determines from signals received in the transmission arrangement using the serial port

24 a preferred current position for the input object 34 (figure 1; column 3 lines 35-56; column 17 lines 46-67; column 18 lines 1-4) Further Rosenberg discloses that the host computer 12 determines an output force and direction needed to move the input object 34 of the haptic device 14 from the current position to the desired position (figure 1; column 17 lines 46-67; column 18 lines 1-4). Rosenberg discloses that that output force is further modified by a damping factor to slow movement between the positions and the host computer 12 outputs signals corresponding to this modified force and direction (figure 1; figure 5; column 17 lines 46-67; column 18 lines 1-4).

Regarding claim 9, 373 discloses everything as applied above (see claim 8), further Rosenberg discloses that the control means receives signals from the haptic output device, said signals containing data defining the position of said device at any particular time, said control means converting said data to signals for transmission to said bi-directional transmission arrangement at predetermined intervals. Specifically 373 discloses that the host computer 12 receives signals from the haptic device 14 where the signal contain data for the position of the input object 34 at any time where the host computer converts the position data into force signals for the haptic device 14 where the host computer 12 receives the data and converts it at predetermined time intervals (figure 1; figure 5; column 17 lines 46-67; column 18 lines 1-4).

Regarding claim 14, 373 discloses an interactive haptic output terminal in combination with a bi- directional transmission arrangement, the terminal comprising at least a haptic output device and control means, said control means receiving signals from said haptic output device to determine a current position for said device, and to

determine from signals received from said transmission arrangement a preferred current position for said haptic output device, said control mean determining an output force and direction required to move said haptic output device from the current position to the preferred position and further modifying said output force and direction using a damping factor to slow apparent movement between the positions and outputting signals defining the modified force and direction. Specifically 373 discloses a host computer system 12 used with a force feedback interface device 14 in a bi-directional transmission arrangement where the host computer system 12 receives signals from the haptic output device to determine the last stored current position of input object 34 and determines from signals received in the transmission arrangement using the serial port 24 a preferred current position for the input object 34 (figure 1; column 3 lines 35-56; column 17 lines 46-67; column 18 lines 1-4) Further Rosenberg discloses that the host computer 12 determines an output force and direction needed to move the input object 34 of the haptic device 14 from the current position to the desired position (figure 1; column 17 lines 46-67; column 18 lines 1-4). Rosenberg discloses that that output force is further modified by a damping factor to slow movement between the positions and the host computer 12 outputs signals corresponding to this modified force and direction (figure 1; figure 5; column 17 lines 46-67; column 18 lines 1-4).

Regarding claim 15, 373 discloses everything as applied above (see claim 8), further Rosenberg discloses that the control means receives signals from the haptic output device, said signals containing data defining the position of said device at any particular time, said control means converting said data to signals for transmission to

said bi-directional transmission arrangement at predetermined intervals. Specifically 373 discloses that the host computer 12 receives signals from the haptic device 14 where the signal contain data for the position of the input object 34 at any time where the host computer converts the position data into force signals for the haptic device 14 where the host computer 12 receives the data and converts it at predetermined time intervals (figure 1; figure 5; column 17 lines 46-67; column 18 lines 1-4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg et al. (United States Patent 6,101,530), hereinafter referenced as 530, in view of Rosenberg et al. (United States Patent 5,734,373), hereinafter referenced as 373.

Regarding claim 1, 530 discloses a method of activating a haptic output device of the kind responsive to signals defining directional force comprising receiving a series of signals defining a multiplicity of data packets, each packet defining a directional force applied at one location for transmission to the current location, determining from packet data the information defining a position to which a haptic output device is expected to move, using current positional data to generate output signals defining force and

direction. Specifically 530 discloses a method of activating a haptic device 24 responsive to directional force comprising:

having the client machine 14 receive signals defining data packets over a TCP/IP connection where each packet of the received packets has data corresponding to directional force applied at a separate client 16 for transmission to client machine 14 (figure 6; figure 1; column 9 lines 44-67; column 10 lines 8-35; column 1 lines 45-52).

determining from received data the position for the force feedback device 24 to move to (figure 6; figure 1; column 9 lines 44-67; column 1 lines 45-52).

using the position data of the current position of the haptic device to generate force and output signals to be sent to the other client 16 (figure 6; column 10 lines 8-35), however 530 fails to disclose applying a damping factor to said force and direction signals to slow the rate of movement from a previously defined position towards the current defined position, however the examiner maintains that it was well known in the art to provide applying a damping factor to said force and direction signals to slow the rate of movement from a previously defined position towards the current defined position, as taught by 373.

In a similar field of invention 373 discloses a method and apparatus for controlling force feedback interface systems utilizing a host computer. In addition 373 discloses that the a damping factor is applied to the force and direction signals to slow movement between the current position and the previous position (figure 1; figure 5; column 17 lines 46-67; column 18 lines 1-4).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 530 by specifically providing pplying a damping factor to said force and direction signals to slow the rate of movement from a previously defined position towards the current defined position for the purpose of allowing damping to take place in a force feedback device to simulate an environment.

Regarding claim 2, 530 and 373, the combination discloses everything as applied above (see claim 1), further 530 discloses signaling in each direction whereby haptic forces applied at one device in reaction to an applied force towards the current defined position are reflected to a corresponding device in the form of current positional signals in a series of return data packets. Specifically 530 discloses that the client computer 14 and client computer 16 signal in each direction where haptic force is applied at the force feedback device 24 in reaction to an applied force towards the current position by the user where the force is communicated to client machine 16 through current positional signals transmitted as data in return data packets (figure 6; figure 1; column 9 lines 44-67; column 10 lines 8-35; column 1 lines 45-52).

Regarding claim 3, 530 and 373, the combination discloses everything as applied above (see claim 1), further 530 discloses a TCP/IP network on which data packets are carried (figure 6), however 530 fails to disclose calculating the damping factor from determined parameters of a transmission network, however the examiner maintains that was well known in the art to provide calculating the damping factor from determined parameters of a transmission network, as taught by 373.

In a similar field of invention 373 discloses a method and apparatus for controlling force feedback interface systems utilizing a host computer. In addition 373 discloses that a damping factor is calculated from the timing parameters of a transmission network (figure 1; figure 5; column 18 lines 8-30; column 3 lines 35-56).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 530 by specifically providing calculating the damping factor from determined parameters of a transmission network for the purpose of allowing damping to take place in a force feedback device to simulate an environment.

Regarding claim 6, 530 and 373, the combination discloses everything as applied above (see claim 1), further 373 discloses applying a weighting factor in addition to the damping factor, the weighting factor being derived from other parameters of the interconnection such as resilience, hence the examiner maintains that it was well known in the art.

In a similar field of invention 373 discloses a method and apparatus for controlling force feedback interface systems utilizing a host computer. In addition 373 discloses that a weighting factor is included in addition to the damping factor where the weighting factor is derived from parameters of the interconnection including processing speeds of the processors (figure 1; figure 5; column 18 lines 8-30; column 3 lines 35-56).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 530 by specifically providing applying a weighting

factor in addition to the damping factor, the weighting factor being derived from other parameters of the interconnection such as resilience for the purpose of allowing damping to take place in a force feedback device and for force feedback to be dependent on interconnection parameters.

Regarding claim 13, 530 and 373, the combination discloses everything as applied above (see claim 1), further 530 discloses signaling in each direction whereby haptic forces applied at one device in reaction to an applied force towards the current defined position are reflected to a corresponding device in the form of current positional signals in a series of return data packets. Specifically 530 discloses that the client computer 14 and client computer 16 signal in each direction where haptic force is applied at the force feedback device 24 in reaction to an applied force towards the current position by the user where the force is communicated to client machine 16 through current positional signals transmitted as data in return data packets (figure 6; figure 1; column 9 lines 44-67; column 10 lines 8-35; column 1 lines 45-52).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over 530, in view of 373 and further in view of Chafe (United States Patent 6,801,939), hereinafter referenced as Chafe.

Regarding claim 4, 530 and 373, the combination discloses everything as applied above (see claim 3), however 530 fails to disclose that latency of the network is determined by transmitting a data packet to the network said packet including a time determinant identity, reflecting the data packet through the network and comparing the

received time with the transmitted time to provide a latency parameter from which said damping factor is determined, however the examiner maintains that it was well known in the art to provide that latency of the network is determined by transmitting a data packet to the network said packet including a time determinant identity, reflecting the data packet through the network and comparing the received time with the transmitted time to provide a latency parameter from which said damping factor is determined, as taught by Chafe and 373, respectively.

Regarding that latency of the network is determined by transmitting a data packet to the network said packet including a time determinant identity, reflecting the data packet through the network and comparing the received time with the transmitted time to provide a latency parameter, in a similar field of invention Chafe discloses a method for evaluating quality of service of a digital network connection. In addition Chafe discloses that the latency of a network 10 is determined by transmitting a data packet to the network 10 where the packet has a round trip time and where the packet is reflected back through the network to a first computer 12 where the first computer compares the received time with the transmitted time to provide a latency parameter (column 2 lines 20-36).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 530 by specifically providing latency of the network is determined by transmitting a data packet to the network said packet including a time determinant identity, reflecting the data packet through the network and comparing the

received time with the transmitted time to provide a latency parameter for the purpose of allowing network latency to be calculated.

Regarding from which said damping factor is determined, in a similar field of invention 373 discloses a method and apparatus for controlling force feedback interface systems utilizing a host computer. In addition 373 discloses that a damping factor is further derived from a time delay factor in the interconnection network (figure 1; figure 5; column 18 lines 8-30; column 3 lines 35-56).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 530 by specifically providing from which said damping factor is determined for the purpose of allowing the timing factors in the interconnection network to affect the damping effect in the force feedback system.

Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over 530, in view of 373 and in view of Chafe and further in view of Wang et al. (United States Patent 6,852,107), hereinafter referenced as Wang.

Regarding claim 5, 530 and 373, the combination discloses everything as applied above (see claim 4), however 530 fails to disclose at least some transmitted packets carrying positional data also include the time determinant data, some of said time determinant data being returned to permit updating of the latency parameter, however the examiner maintains that it was well known to provide at least some transmitted packets carrying positional data also include the time determinant data, some of said

time determinant data being returned to permit updating of the latency parameter, as taught by Wang and Chafe, respectively.

Regarding at least some transmitted packets carrying positional data also include the time determinant data, in a similar field of invention Wang discloses a minimally invasive surgical training using robotics and tele-collaboration. In addition Wang discloses that packets sent over a network carry positional data and time determinant data including transmit and receive rates and other time determinant data (figure 8; figure 10; column 7 lines 47-55; column 8 lines 35-57)

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 530 by specifically providing at least some transmitted packets carrying positional data also include the time determinant data for the purpose of allowing packets containing position data and time data to be transmitted together. .

Regarding some of said time determinant data being returned to permit updating of the latency parameter, in a similar field of invention Chafe discloses a method for evaluating quality of service of a digital network connection. In addition Chafe discloses that the latency of a network 10 is determined by transmitting a data packet to the network 10 where the packet has a round trip time and where the packet is reflected back through the network and returned to a first computer 12 where the first computer compares the received time with the transmitted time to permit updating of a latency parameter (column 2 lines 20-36).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 530 by specifically providing some of said time determinant data being returned to permit updating of the latency parameter for the purpose of allowing network latency to be calculated.

Claims 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over 530, in view of 373 and further in view of Wang.

Regarding claim 7, 530 and 373, the combination discloses everything as applied above (see claim 1), however 530 fails to disclose applying a modifying factor to the force and direction signals, said modifying factor being derived from pre determined user preference data, however the examiner maintains that it was well known to provide applying a modifying factor to the force and direction signals, said modifying factor being derived from pre determined user preference data, as taught by Wang.

In a similar field of invention Wang discloses a minimally invasive surgical training using robotics and tele-collaboration. In addition Wang discloses that a modifying factor is applied to the force and direction signals, where the user selects the modifying factor (figure 8; figure 12; column 10 lines 42-67; column 11 lines 1-39).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 530 by specifically providing applying a modifying factor to the force and direction signals, said modifying factor being derived from pre determined user preference data for the purpose of allowing a user to control the force feedback in a device.

Claims 10-11 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg et al. (United States Patent 5,734,373), hereinafter referenced as 373, in view of Niemeyer et al. (United States Patent 6,144,884), hereinafter referenced as Niemeyer.

Regarding claim 10, 530 and 373, the combination discloses everything as applied above (see claim 8), however 530 fails to disclose the signals defining a preferred current position are generated by an environment simulator, for example a programmed computer, however the examiner maintains that it was well known to provide the signals defining a preferred current position are generated by an environment simulator, for example a programmed computer, as taught by Niemeyer.

In a similar field of invention Niemeyer discloses teleoperation with variable delay. In addition Niemeyer discloses that the signals defining a preferred current position for an output are generated by a slave simulator at the slave terminal 250 (figure 1; figure 2; column 5 lines 29-49).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 530 by specifically providing the signals defining a preferred current position are generated by an environment simulator, for example a programmed computer for the purpose of allowing a user to control the position of objects in a simulated environment.

Regarding claim 11, 530 and 373, the combination discloses everything as applied above (see claim 8), however 530 fails to disclose the signals defining a

preferred current position are generated by a corresponding interactive output terminal at the opposed end of the transmission arrangement, however the examiner maintains that it was well known to provide the signals defining a preferred current position are generated by a corresponding interactive output terminal at the opposed end of the transmission arrangement, as taught by Niemeyer.

In a similar field of invention Niemeyer discloses teleoperation with variable delay. In addition Niemeyer discloses that the signals defining a preferred current position for an output are generated by a slave simulator at the slave terminal 250 (figure 1; figure 2; column 5 lines 29-49).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 530 by specifically providing signals defining a preferred current position are generated by a corresponding interactive output terminal at the opposed end of the transmission arrangement for the purpose of allowing a user to control the position of objects in a simulated environment.

Regarding claim 16, 530 and 373, the combination discloses everything as applied above (see claim 14), however 530 fails to disclose the signals defining a preferred current position are generated by an environment simulator, for example a programmed computer, however the examiner maintains that it was well known to provide the signals defining a preferred current position are generated by an environment simulator, for example a programmed computer, as taught by Niemeyer.

In a similar field of invention Niemeyer discloses teleoperation with variable delay. In addition Niemeyer discloses that the signals defining a preferred current position for an output are generated by a slave simulator at the slave terminal 250 (figure 1; figure 2; column 5 lines 29-49).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 530 by specifically providing the signals defining a preferred current position are generated by an environment simulator, for example a programmed computer for the purpose of allowing a user to control the position of objects in a simulated environment.

Regarding claim 17, 530 and 373, the combination discloses everything as applied above (see claim 14), however 530 fails to disclose the signals defining a preferred current position are generated by a corresponding interactive output terminal at the opposed end of the transmission arrangement, however the examiner maintains that it was well known to provide the signals defining a preferred current position are generated by a corresponding interactive output terminal at the opposed end of the transmission arrangement, as taught by Niemeyer.

In a similar field of invention Niemeyer discloses teleoperation with variable delay. In addition Niemeyer discloses that the signals defining a preferred current position for an output are generated by a slave simulator at the slave terminal 250 at the opposite end of a transmission (figure 1; figure 2; column 5 lines 29-49).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 530 by specifically providing signals defining a preferred current position are generated by a corresponding interactive output terminal at the opposed end of the transmission arrangement for the purpose of allowing a user to control the position of objects in a simulated environment.

Claims 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over 373 in view of Wang and further in view of Rosenberg et al. (United States Patent 5,959,613), hereinafter referenced as 613.

Regarding claim 12, 373 discloses everything as applied above (see claim 8), however 373 fails to disclose that a series of packets defining preferred position are received, each packet defining a directional force applied at one location for transmission to the current location, the control means includes means to determine from packet data the sequence of transmission and re-ordering the data into a numerically correct series, extrapolating from previously received packets an anticipated linear movement to be defined by subsequently received packets and applying output directional force signals corresponding to said anticipated linear movement in respect of any missing data packet, however the examiner maintains that it was well known in the art to provide a series of packets defining preferred position are received, each packet defining a directional force applied at one location for transmission to the current location, the control means includes means to determine from packet data the sequence of transmission and re-ordering the data into a numerically correct series, extrapolating from previously received packets an anticipated linear movement to be

defined by subsequently received packets and applying output directional force signals corresponding to said anticipated linear movement in respect of any missing data packet, as taught by Wang and 373, respectively.

Regarding a series of packets defining preferred position are received, each packet defining a directional force applied at one location for transmission to the current location, the control means includes means to determine from packet data the sequence of transmission and re-ordering the data into a numerically correct series, in a similar field of invention Wang discloses a minimally invasive surgical training using robotics and tele-collaboration. In addition Wang discloses that a series of packets defining preferred position are received by computer 150, where each packet defines a directional force applied at a remote location 140 for transmission to computer 150, where the computer 150 receives the packets and determines the sequence of transmission from the packets and re-orders the packet data in numerical order (figure 7; column 7 lines 56-67; column 8 lines 1-17).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 373 by specifically providing a series of packets defining preferred position are received, each packet defining a directional force applied at one location for transmission to the current location, the control means includes means to determine from packet data the sequence of transmission and re-ordering the data into a numerically correct series for the purpose of allowing packets in non-numerical order to be re-ordered to provide accurate output.

Regarding extrapolating from previously received packets an anticipated linear movement to be defined by subsequently received packets and applying output directional force signals corresponding to said anticipated linear movement in respect of any missing data packet, in a similar field of invention 613 discloses a method and apparatus for shaping force signals for a force feedback device. Further 613 discloses that a local processor receives packets of data defining a linear movement for a force where the movement is further defined by subsequent force data packets and applies output directional force signals corresponding to the force feedback data regardless of missing packets when overlapping data is contained in received packets (figure 1; column 3 lines 54-67; column 4 lines 1-20; column 9 lines 45-52).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 373 by specifically providing extrapolating from previously received packets an anticipated linear movement to be defined by subsequently received packets and applying output directional force signals corresponding to said anticipated linear movement in respect of any missing data packet for the purpose of allowing packet data to be transmitted in an overlapping fashion to avoid data loss.

Regarding claim 18, 373 discloses everything as applied above (see claim 14), however 373 fails to disclose that a series of packets defining preferred position are received, each packet defining a directional force applied at one location for transmission to the current location, the control means includes means to determine from packet data the sequence of transmission and re-ordering the data into a

numerically correct series, extrapolating from previously received packets an anticipated linear movement to be defined by subsequently received packets and applying output directional force signals corresponding to said anticipated linear movement in respect of any missing data packet, however the examiner maintains that it was well known in the art to provide a series of packets defining preferred position are received, each packet defining a directional force applied at one location for transmission to the current location, the control means includes means to determine from packet data the sequence of transmission and re-ordering the data into a numerically correct series, extrapolating from previously received packets an anticipated linear movement to be defined by subsequently received packets and applying output directional force signals corresponding to said anticipated linear movement in respect of any missing data packet, as taught by Wang and 373, respectively.

Regarding a series of packets defining preferred position are received, each packet defining a directional force applied at one location for transmission to the current location, the control means includes means to determine from packet data the sequence of transmission and re-ordering the data into a numerically correct series, in a similar field of invention Wang discloses a minimally invasive surgical training using robotics and tele-collaboration. In addition Wang discloses that a series of packets defining preferred position are received by computer 150, where each packet defines a directional force applied at a remote location 140 for transmission to computer 150, where the computer 150 receives the packets and determines the sequence of

transmission from the packets and re-orders the packet data in numerical order (figure 7; column 7 lines 56-67; column 8 lines 1-17).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 373 by specifically providing a series of packets defining preferred position are received, each packet defining a directional force applied at one location for transmission to the current location, the control means includes means to determine from packet data the sequence of transmission and re-ordering the data into a numerically correct series for the purpose of allowing packets in non-numerical order to be re-ordered to provide accurate output.

Regarding extrapolating from previously received packets an anticipated linear movement to be defined by subsequently received packets and applying output directional force signals corresponding to said anticipated linear movement in respect of any missing data packet, in a similar field of invention 613 discloses a method and apparatus for shaping force signals for a force feedback device. Further 613 discloses that a local processor receives packets of data defining a linear movement for a force where the movement is further defined by subsequent force data packets and applies output directional force signals corresponding to the force feedback data regardless of missing packets when overlapping data is contained in received packets (figure 1; column 3 lines 54-67; column 4 lines 1-20; column 9 lines 45-52).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify 373 by specifically providing extrapolating from previously received packets an anticipated linear movement to be defined by

subsequently received packets and applying output directional force signals corresponding to said anticipated linear movement in respect of any missing data packet for the purpose of allowing packet data to be transmitted in an overlapping fashion to avoid data loss.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STUART MCCOMMAS whose telephone number is (571)270-3568. The examiner can normally be reached on Monday-Friday 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jefferey Harold can be reached on (571)272-7519. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stuart McCommas
Examiner
Art Unit 4115

SSM
/Jefferey F Harold/
Supervisory Patent Examiner, Art Unit 4115